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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/601,797

06/23/2003

Wolfgang Franz Eckl

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06/29/2004

Docket Administration (Room 3J-219)
Lucent Technologies Inc.
101 Crawfords Corner Road
Holmdel, NJ 07733-3030

EXAMINER

CHANG, JOSEPH

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,797

Applicant(s)

ECKL ET AL.

Examiner

Joseph Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☒ Claim(s) 2,3,7 and 8 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/23/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the resonance circuit as it relates to the claims 7 and 8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 2,3,6 recite "and/or wherein". They appear to be a literal translation into English from a foreign document and have grammatical and idiomatic errors.

Claim 6 recites "and/or a surface", which makes the claim unclear as to whether or not both bulk and surface types of micromachining are employed during production.

Claim 8 recites "and/or" in third line, which makes the claim unclear as to whether or not the four different types of resonators are contained in the resonance circuit.

Claim 8 recites "the resonance circuit". There is insufficient antecedent basis for this limitation in the claim. It appears that the referring claim "The device of Claim 1" should be --The device of Claim 7--.

For the purposes of expediting prosecution on the merits of the claims, the examiner has attempted to construe the claims to the extent possible for the following art rejection. The recitation "and/or" in the claims has been considered as a three-optional limitation, for example, A and/or B is logically (A and B) or (A or B) i.e. AB or A or B.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiomi et al. (US 4667168).

Shiomi et al. discloses a device (IC in figures 5, 7, 9 and 11) (col. 10, line 50 - col.11, line 10) for providing tunable high-frequency (col.6, line 68) comprising within one IC-package (see Abstract and Figure 11) at least four signal paths (paths from ports 69, 70, 71, 72, 73) providing at least two input (69 and 71) and at least two output (72, 73) ports at least one active component (see LPF 22, a transistor on right) and at least one variable passive component (variable capacitor) connected at least with an input port of the active component (terminal 71 is an input port for both transistors in LPF 22), and at least one control path (path of control voltage from port 70) for controllable tuning the at least one variable passive component (Col.11, lines 4-7).

Regarding Claim 6, the recitation "wherein produced by using a Micro-Electro-Mechanical-Systems (MEMS) technology, in particular produced by employing a bulk micromachining and/or a surface micromachining technology", has not been given any patentable weight because it is considered process steps and they are directed to how the device is made and not a structural limitation. It should be noted that a "product-by-process" claim is directed to the product per se, no matter how such a product was made. It has been well established by the Courts that it is the patentability of the final product per se which must be determined in a "product-by-process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product-by-process" form or not. See *In re Hirao*, 190 USPQ 15 at 17 (footnote 3); *In re Brown*, 173 USPQ

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685; In re Luck, 177 USPQ 523; In re Fessman, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Marosi et al., 218 USPQ 289; and in particular In re Thorpe, 227 USPQ 964.

It is noted that the limitation "and/or wherein the variable component is produced as MEMS varactor" has not been considered for being an alternative limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiomi et al. (US 4667168) in view of Chang et al. (US 5959516).

As noted above, Shiomi et al. discloses a device (IC in figures 5, 7, 9 and 11) (col. 10, line 50 - col.11, line 10) for providing tunable high-frequency (col.6, line 68)

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comprising within one IC-package (see Abstract and Figure 11) at least four signal paths (paths from ports 69, 70, 71, 72, 73) providing at least two input (69 and 71) and at least two output (72, 73) ports at least one active component (see LPF 22, a transistor on right) and at least one variable passive component (variable capacitor) connected at least with an input port of the active component (terminal 71 is an input port for both transistors in LPF 22), and at least one control path (path of control voltage from port 70) for controllable tuning the at least one variable passive component (Col.11, lines 4-7).

However, Shiomi et al. does not disclose a structure of a Micro-Electro Mechanical-Systems (MEMS) variable capacitor as recited in Claims 4 and 5.

Chang et al. discloses a MEMS tunable capacitor in figures 7 (Col. 8, line 20-35) having an actuator (electrostatically controlled actuator 76) for driving a variable element (movable plate 100 of signal capacitor 96) of the component (94) to vary an effective area (100 and 98) thereof, in particular by changing the degree of engagement of fingers of a comblike structure (74). Chang et al. teaches that the MEMS capacitor provides a large tuning ratio whereas a typical solid-state varactor diode provides only 50% or less and also the MEMS capacitor is insensitive to the signal voltage that causes an error (col. 1, line 50-59).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a MEMS tunable capacitor, as taught by Chang et al., for the variable capacitor of Shiomi et al. for the purpose of obtaining a

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large tuning ratio and among other advantages over a typical solid-state varactors, as taught by Chang et al.

Allowable Subject Matter

Claims 2,3 and 7-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the best prior art of record, Shiomi, taken alone or in combination of other references, does not teach or fairly suggest each of the variable passive component is individually controllable (Claim 2), or the at least one control path is isolated from the signal path into which the at least one variable component is connected (Claim 3), or a resonance circuit coupled to the at least one tunable passive component in parallel (Claims 7 and 8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chigira et al. discloses a resonant circuit for VCO.

Grewing et al. discloses a VCO for frequency modulator.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Chang whose telephone number is 571 272-1759. The examiner can normally be reached on Mon-Fri 0700-1730.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph Chang
Patent Examiner
Art Unit 2817

JC